

Application No.: 10/521,906
Amendment and Response dated March 20, 2008
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Remarks/Arguments:

Introduction

Claims 17-26 and 28-32 are pending. Claim 17 has been amended to include the limitations of claim 27 and some of the limitations of claim 31. Claim 29 has also been amended to include some of the limitations of claim 31. Claim 27 has been canceled. Claim 31 has been amended following the amendment to claim 29. Claim 32 has also been amended. Support for this amendment may be found in previously presented claims 31. No new matter is introduced with these amendments. Entry of the amendments is respectfully requested.

The invention provides a device, method for using such a device, as well as use of such a device, for the piece-wise or batch-wise refining of pieces of a substrate with a treatment medium under high-pressure in a supercritical or near critical state.

Section 103 Rejections

Claims 17-26, 29, 30 and 32 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,491,518 to Fujikawa et al. (hereinafter "Fujikawa") in view of U.S. Patent No. 4,471,949 to Ishii (hereinafter "Ishii") and U.S. Patent No. 6,491,882 to Van Den Berg et al. (hereinafter "Van Den Berg"). Claims 27 and 31 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Fujikawa in view of Ishii and Van Den Berg and in further view of U.S. Patent No. 6,652,654 to Propp et al. (hereinafter "Propp") and U.S. Patent Application Publication No. 2002/0132007 to Randolph et al. (hereinafter "Randolph"). Applicant respectfully traverses.

Fujikawa shows in figure 1 a pressure cylinder 1 having a top lid 2 and a bottom lid 3 together delimiting a treating chamber 4. In the lid 2 a high-pressure gas inlet/outlet hole 2A is provided. Column 6, lines 58 -62 describes that the lids 2 and 3 may be delimited by press

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frames 6 which may be a yoke type. Figure 1 shows a closed position, whereas figure 5 shows an open position of the press frames 6.

The pressure cylinder of Fujikawa is intended for the treatment of semi conductor wavers with for example a treatment medium such as argon gas and nitrogen gas.

The pressure cylinder of Fujikawa is not designed for the refining of pieces of a substrate with a treatment medium under high pressure in supercritical or near critical state. For example, the dying and/or washing in supercritical or near critical CO₂, the dying and the acidifying of paper in supercritical or near critical CO₂, or dying and tanning of leather in supercritical or near critical CO₂ is not possible with the construction of Fujikawa. In particular, the materials of the several parts of the construction of Fujikawa which, during a treatment cycle, are in direct contact with the treatment medium, are not resistant against the supercritical or near critical treatment medium, like CO₂. Fujikawa fails to disclose, teach or suggest how the lids are sealed in the pressure cylinder. In the absence of any discussion Fujikawa fails to disclose, teach or suggest that any special sealing arrangements need to be taken. Also, Fujikawa fails to disclose, teach or suggest that its lids have the ability to axially slide with respect to the cylinder. More likely, the yoke of Fujikawa is going to tilt during movement of the yoke, and subsequently hit the lids causing the pressure cylinder to be damaged.

Ishii shows a pressure cylinder 2 having upper and lower plugs 3 and 4 for closing the upper and lower open ends of the pressure cylinder 2, to define a high pressure chamber 1 therein. The upper plug 3 is provided with a pressure inlet passage 5. Column 2, lines 55-60 describes that the axial force which acts against the upper and lower plug 3 and 4 are supported by threaded engagement of the upper and lower plugs 3 and 4 with the pressure cylinder or with the aid of a press mechanism.

Ishii is designed for a so called hot isostatic pressing system generally used for sintering powdery material. Like Fujikawa, Ishii is also not suited for the refining of pieces of a substrate with a treatment medium under high pressure in supercritical or near critical state. Furthermore, retaining means comprising a bounding frame that is circumferentially closed for retaining the upper and lower plugged 3 and 4 in position, is not disclosed, taught or suggested in Ishii.

Van Den Berg shows a cylindrical high-pressure vessel 3 which is formed from a number of layers of composite material, such as glass, carbon or aramide fibers. The cylindrical high-pressure vessel 3 together with a housing 2, a foot piece 5 and a pressure ring 14, can be placed between a circumferentially closed yoke 4, made up of a number of parallel reinforcing plates.

Van Den Berg is not intended nor suited for the refining of pieces of a substrate with a treatment medium under high pressure in supercritical or near critical state. Instead Van Den Berg is used to sterilize foodstuffs, pharmaceuticals, and cosmetic preparations by treating them under high-pressure of between 1,000 and 15,000 bar, thus killing harmful microorganisms and enzymes without vitamins being damaged or the taste being impaired. For example, the construction of the sealings of Van Den Berg is different from the present invention. Looking at figure 3 of Van Den Berg, the outer seal 33 lying against a liner 25, that is to say the inside of the vessel 3, is static. This seal 33 is not allowed to slide, because otherwise the liner 25 will extend and get damaged. The inner seal 34 is a dynamic high-pressure seal between a piston rod 8 and a ring 24. No lids are used in Van Den Berg which are able to slide inside the high-pressure vessel 3.

Proprietary is directed to a system for applying a material to a substrate. Critical or near-critical conditions are mentioned. Proprietary, however, fails to teach or suggest the device of claim 1 which includes, *inter alia*, a cylindrical pressure vessel with on at least one of its two end faces an aperture that can be closed by a lid, which aperture forms said feed aperture, a

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retaining means for keeping said lid in place in a sealing manner during treatment, where said retaining means comprise a bounding frame that is circumferentially closed, with two interconnected end pieces situated at a distance from each other, which end pieces in a closed position can be slid over said pressure vessel and thereby retain said end faces of said pressure vessel in its axial direction. Moreover, Propp fails to teach or suggest the method of claim 29 which comprises, *inter alia*, sliding said pressure vessel and the bounding frame out of each other and opening said lid. Randolph also mentions the use of critical or near critical fluids. Randolph, like Propp, however, fails to teach or suggest the device and method limitations as set forth above with the discussion of Propp. Further, Propp and Randolph, fail to teach or suggest how the systems of Fujikawa, Ishii and/or Van Den Berg could somehow be modified to operate at critical or near critical conditions.

In establishing a *prima facie* case of obviousness, the cited references must be considered for the entirety of their teachings. *Bausch & Lomb, Inc. v. Barnes-Hind, Inc.*, 230 U.S.P.Q. 416, 419 (Fed. Cir. 1986). It is impermissible during examination to pick and choose from a reference only so much that supports the alleged rejection. *Id.* It is only through hindsight reconstruction and selective picking and choosing does the Examiner attempt to reach the present invention through the combination of Fujikawa, Ishii, Van Den Berg, Propp and/or Randolph. It is also well established, however, that hindsight reconstruction of a reference does not present a *prima facie* case of obviousness, and any attempt at hindsight reconstruction using Appellant's disclosure is strictly prohibited. *In re Oetiker*, 24 U.S.P.Q.2d 1443, 1445-46 (Fed. Cir. 1993). Such hindsight reconstruction by the Examiner is clear as Fujikawa, Ishii, Van Den Berg, Propp and/or Randolph fail to teach or suggest the limitations of the subject invention.

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Summary

Therefore, Applicants respectfully submit that claims 17-26 and 28-32 are patentably distinct. This application is believed to be in condition for allowance. Favorable action thereon is therefore respectfully solicited.

Should the Examiner have any questions or comments concerning the above, the Examiner is respectfully invited to contact the undersigned attorney at the telephone number given below.

The Commissioner is hereby authorized to charge payment of any additional fees associated with this communication, or credit any overpayment, to Deposit Account No. 08-2461. Such authorization includes authorization to charge fees for extensions of time, if any, under 37 C.F.R. § 1.17 and also should be treated as a constructive petition for an extension of time in this reply or any future reply pursuant to 37 C.F.R. § 1.136.

Respectfully submitted,

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